

PURCHASE ORDER NO. 2-2501
LADOTD Pavement Management
System (PMS) for Project Level Applications

PROBLEM STATEMENT

The Pavement Management System (PMS) of the Louisiana Department of Transportation and Development (LADOTD) has provided an immense amount of data on pavement surface distress conditions at the network level. Since instituted in 1990, the system covers the interstate highway system (1775 roadway miles), arterial/collector systems (17,175 roadway miles), non-state maintained national highway system (140 roadway miles), and the off-system sample components of the Highway Performance Monitoring System (503 roadway miles). All these data are collected by an independent consultant on a two-year collection cycle.

Because of its enormous information and convenience for access, more and more users have started to use the PMS data for project level activities, especially for pavement preservation at the local district levels. They have compared the distress data such as cracks and rutting from the PMS with those from field observations, hoping they match so that more confidence and credentials can be established with the PMS data. At the network level, Department policies, guidelines, and procedures having vital and extensive impacts on LADOTD's operation, functions, and performance can be developed based on PMS data. This is a legitimate course considering the current environment within LADOTD due to the downsizing and limited funding level. However, network and project levels often yield different sets of data due to the differences in their intended purposes and the ways in which they are collected. Clearly, a guideline will be very helpful to accommodate such users' needs, which will specify the accuracy and limitation of the current PMS data in addition to others. On the other hand, the information contained in the guidelines will also help PMS managers improve their quality control and quality assurance in data collection and management.

OBJECTIVES

The main objective of this project is to develop a guideline that provides information on how network level PMS data can be used at project level in the activities of pavement engineering. This objective will be accomplished by a comprehensive assessment of the network level data provided by the current PMS. The research is anticipated to encompass at a minimum the following tasks:

TASK 1 - Literature Review and User Survey

This will include a literature search of previous and on-going nationwide research projects and case studies on the subject. The research team is expected to work closely with the PMS users of LADOTD to identify the needs of how the current PMS can or should be used at a project level and define the scope of PMS data to be analyzed for project level applications. The PMS user group within the Department will be a good platform, and user surveys and interviews can be conducted within the Department for this purpose.

TASK 2 - Establishment of Criteria and Benchmark for Quality Checks

Based on the results of the literature search and use survey, the research team will determine the basic requirements for PMS data to be used at a project level and criteria and benchmarks to be used in the assessment of PMS data so that the outcome of this study can be realistically implemented.

TASK 3 - Development of an Assessment Plan

The research team will develop a plan to assess the accuracy and reliability of the PMS data currently available in LADOTD and to explore the limitations of their potential applications at the project level. The plan should consider the data type, sample size, analytical tools and procedures, pavement type, highway functional class, pavement engineering activities, etc. The involvement of a statistician is strongly recommended for this task.

An interim report shall be submitted to the Project Review Committee (PRC) at the end of this task to summarize and disseminate the findings and recommendations. This report shall be submitted within four months of project initiation. LADOTD reserves the right to modify the remaining of tasks based upon the results of this phase.

TASK 4 - Quantitative Assessment of Accuracy, Reliability, and Limitations

The research team will execute the research plan developed in Task 3 as approved by the PRC. LADOTD will provide support for field data collection as needed.

TASK 5 - Recommendation for Quality Improvement of Data

Based on the results from Task 4, the research team will make recommendations on how to improve the quality of PMS data to be collected as well as the process of quality control and quality assurance for data acceptance. The research team is expected to work closely with PMS managers and those familiar with the current practice of LADOTD and the industry.

TASK 6 - Development of Guidelines for Project Level Applications

The research team will develop the guidelines for using current PMS data at a project level as the results of previous tasks. The guidelines should consider the needs at both the network and project level. In addition, the use of PMS data for research purposes should be addressed. The guideline should include a risk assessment and the limitations of current PMS data when used at the project level. The examples of various applications are expected. A detailed discussion on the limitation of current PMS data in such applications will be very useful and helpful.

TASK 7 - Prepare Final Report

The research team will prepare a final report to document the entire research effort. The final report should include all the results and products that LADOTD can use at both the network and project level to maximize the utility of the PMS database. A benefit assessment of such implementation should also be included as one of the deliverables for future marketing purposes. The research team is expected to present the research results to LADOTD personnel at the conclusion of the study.

SPECIAL NOTES

- A. Task descriptions are intended to provide a framework for conducting the research. LTRC is seeking the insight of proposers on how best to achieve the research objectives. Proposers are expected to describe research plans that can be realistically accomplished within the constraints of available funds and contract time. Proposals must present the candidate's current thinking in sufficient detail to demonstrate their understanding of the problem and the soundness of their approach.
- B. Hours and cost for each task of the research are required for appraisal with a maximum of 20% of research funding for Tasks 1-3.
- C. LTRC projects are intended to produce results that will be applied in practice. It is expected that the implementation of the results of this research into practice will evolve as a concerted effort during this project. The final report must contain an implementation plan to include, as a minimum, the following:
 - a. The "product" expected from the research;
 - b. A realistic assessment of impediments to successful implementation;
 - c. The activities necessary for successful implementation; and
 - d. The criteria for judging the progress and consequences of implementation.
- D. To assist in the implementation process, the investigators of this research shall present the final results to LADOTD officials in an oral presentation to be held in Baton Rouge, LA at LADOTD Headquarters after acceptance of the final report.
- E. The proposal should include travel to meet with the Project Review Committee for a "kick off" meeting, presentation of interim report, and presentation of the final report at a minimum.
- F. To equitably answer any questions regarding this Request for Proposals, the Louisiana Department of Transportation and Development (LADOTD) website, <http://webmail.dotd.louisiana.gov/agrestat.nsf/WebAdvertisements?OpenPage> will be updated with questions and answers and related documents regarding the project. The LADOTD makes these documents available for informational purposes only to aid in the efficient dissemination of information to interested parties. The LADOTD does not warrant the documents against deficiencies of any kind. The data contained within this web site will be periodically updated. Interested parties are responsible to be aware of any updates. Questions regarding this RFP should be submitted in writing to the LTRC contact person. Questions must be received by close of business seven calendar days prior to deadline date.

ESTIMATED COST OF RESEARCH

\$220,000

ESTIMATED COMPLETION TIME

24 months: The draft final report is due 21 months of the initiation of the study. Last three months of the contract is for LTRC review and approval of final report.

LTRC PRIMARY CONTACT

Zhongjie "Doc" Zhang, Ph.D., P.E.
Pavement & Geotechnical Research Administrator
Phone: (225) 767-9162
e-mail: doc.zhang@la.gov

AUTHORIZATION TO BEGIN WORK

January 2011 (Estimated)

PROPOSAL FORMAT

All proposals are required to be formatted according to LTRC Manual of Research Procedures available on the web site: www.ltrc.lsu.edu. Chapter 2 of that manual provides guidance on proposal development.

PROPOSAL SELECTION

The Project Review Committee selected for this project will review, evaluate, and rank all proposals received using the criteria established on the attached proposal review form.

DEADLINE FOR RECEIPT OF PROPOSALS

Ten copies of the proposal must be received by LTRC by the close of business January 7, 2011. Proposals to be submitted to:

Mr. Harold Paul
Director
Louisiana Transportation Research Center
4101 Gourrier Ave.
Baton Rouge, LA 70808

To equitably answer any questions regarding this Request for Proposals, the Louisiana Department of Transportation and Development (LADOTD) website, <http://webmail.dotd.louisiana.gov/agrestat.nsf/WebAdvertisements?OpenPage> will be updated with questions and answers and related documents regarding the project. The LADOTD makes these documents available for informational purposes only to aid in the efficient dissemination of information to interested parties. The LADOTD does not warrant the documents against deficiencies of any kind. The data contained within this web site will be periodically updated. Interested parties are responsible to be aware of any updates. Questions regarding this RFP should be submitted in writing to the LTRC contact person. Questions must be received by close of business seven calendar days prior to deadline date.